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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Joy Sawyer Bloom

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EXAMINER

HON, SOW FUN

ART UNIT

PAPER NUMBER

1772

MAIL DATE

DELIVERY MODE

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/659,168	Applicant(s) BLOOM, JOY SAWYER	
	Examiner Sow-Fun Hon	Art Unit 1772	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 May 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 7-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 11 and 13 is/are allowed.
- 6) ☒ Claim(s) 7-10, 12 and 14-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Request for Reconsideration

Rejections Repeated

1. The 35 U.S.C. 103(a) rejection of claims 7-9, 12, 14-19 over Tsutsumi in view of Maeda is repeated for the same reasons previously of record in the Office action dated 01/03/07.
2. The 35 U.S.C. 103(a) rejection of claim 10 over Tsutsumi in view of Maeda as applied to claims 7-9, 12, 14-19 above, and further in view of Long63 is repeated for the same reasons previously of record in the Office action dated 01/03/07.
3. The 35 U.S.C. 103(a) rejection of claim 20 over Long83 in view of Long63, Maeda and Tsutsumi is repeated for the same reasons previously of record in the Office action dated 01/03/07.

Response to Arguments

4. Applicant's arguments have been fully considered but they are not persuasive.
5. Applicant argues that the claims are directed to a composition of matter, and not a process, while the Office proposes that one skilled in the art would manipulate the process of making the composition to arrive at the claimed invention, and that whether or not a certain process is obvious based on the combined references is inapposite and does not establish obviousness of Applicant's composition.

Applicant is respectfully apprised that the process of selection of the combination of components to form a composition best suited for the desired end-use determines the

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resultant composition claimed. Tsutsumi recites a molding resin composition which comprises resins and other additives such as fluoro-resin, graphite, carbon fibers, aromatic polyamide fibers, potassium titanate fibers and a crystallization accelerator (abstract), wherein said resins comprise a liquid crystalline polyester which has a melting temperature of greater than or equal to 399 °C (can form an anisotropic molten phase at a temperature of 420 °C, abstract). This recitation means that the composition of Tsutsumi can contain at least five of the lubricating fillers disclosed in Applicant's specification, namely the graphite, carbon fibers, potassium titanate fibers, fluoropolymer and aramid (fluoro-resin, aromatic polyamide, page 3, lines 24-27), which is within the claimed range of at least three generic lubricating fillers selected from the group of specific members. Tsutsumi teaches that the filler is present in the amount of from 1-25% (solid lubricant include PTFE, graphite, is usually from 1 to 25 parts by weight of the sum of the polyimide resin and the thermotropic liquid crystal polymer, column 20, lines 27-40), wherein the upper limit of 25% meets the lower limit of the claimed range of at least 25% for the total amount of lubricating fillers, by weight of the composition.

Tsutsumi teaches that the addition of fluoropolymer (additives, fluoro-resin, column 3, line 19), graphite and aramid (aromatic polyamide resin, column 3, line 20), remarkably improves the dimensional heat stability and sliding property, which is another term for lubricating property, of the composition (column 3, lines 20-24), and that the addition of carbon fibers or potassium titanate fibers, remarkably improves the mechanical properties of the composition (column 3, lines 28-35). Tsutsumi thus

provides the motivation to add and combine said fillers with the LCP to form a composition, and to optimize the amounts of the fillers relative to the LCP, in order to obtain the desired balance of lubricating property, dimensional heat stability and mechanical properties. The showing of unexpected results in Applicant's disclosure is only commensurate in scope for the composition allowed in claims 11, 13.

6. Applicant argues that none of the references disclose good wear resistance as defined in Applicant's invention.

Applicant is respectfully reminded that the primary reference Tsutsumi teaches that the composition has good mechanical properties such as wear resistance (column 8, lines 20-31, column 3, lines 28-35), and that while the secondary reference Maeda fails to disclose that the composition has good wear resistance, Maeda teaches that the composition has good mechanical properties (column 1, lines 40-45) which means that the composition inherently has good wear resistance. Thus, the composition of Tsutsumi as modified by Maeda, is expected to inherently have good wear resistance. Tsutsumi teaches the claimed fillers in the claimed ranges, and an LCP matrix material that has repeat units derived from 4-hydroxybenzoic acid (structural unit formula (V), column 16, lines 40-45), 4,4'-biphenol (structural unit formula (VI), column 16, lines 46-51), terephthalic acid (structural unit formula VII, column 16, lines 52-56) and 2,6-naphthalenedicarboxylic acid (structural unit formula VIII, column 16, lines 57-62) which are the same ones disclosed in Applicant's specification (original claim 3), and a melting temperature of greater than or equal to 399 °C (anisotropic molten phase at a temperature of 420 °C, column 4, lines 42-50). A chemical composition and its

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properties are inseparable. If the prior art teaches the identical chemical structure, the properties Applicant discloses and/or claims are necessarily present. See MPEP 2112.01. Thus, the composition of Tsutsumi as modified by Maeda, is expected to inherently have a good wear resistance at conditions of at least 1.75 MPa-m/s (50,000 psi-fpm).

7. Applicant argues that one of ordinary skill in the art would not expect to find the compositional ranges to arrive at the desired lubricating properties and also maintain enhanced mechanical properties; and that mechanical properties have no bearing on lubrication.

Applicant is respectfully apprised that Tsutsumi teaches that the addition of fluoropolymer (additives, fluororesin, column 3, line 19), graphite and aramid (aromatic polyamide resin, column 3, line 20), remarkably improves the dimensional heat stability and sliding property, which is another term for lubricating property, of the composition (column 3, lines 20-24), and that the addition of carbon fibers or potassium titanate fibers, remarkably improves the mechanical properties of the composition (column 3, lines 28-35), thus providing the motivation to add and combine said fillers with the LCP to form a composition, and to optimize the amounts of said fillers relative to the LCP and to each other, in order to obtain the desired balance of lubricating property, dimensional heat stability and mechanical properties.

8. Applicant argues regarding Maeda ('323), that plasticization does not equate with lubrication.

Applicant is respectfully referred to US 4,048,375 that teaches that in most cases, plasticization does equate with lubrication (solid lubricants such as graphite, molybdenum disulfide, column 2, lines 3-4, most lubricants have a plasticizing action, column 2, lines 18-19).

9. Applicant's arguments against the valid use of secondary reference Long63, are directed against the validity of the primary combination of Tsutsumi in view of Maeda, which are addressed above.

10. Applicant argues that none of Long83, Long63, Maeda and Tsutsumi, discuss achieving mechanical properties along with lubrication.

Applicant is respectfully apprised that all four references teach a molding composition comprising LCP as matrix material, and fillers for mechanical strength and other properties.

Long83 is the primary reference that teaches the molding composition comprising LCP as a matrix material, wherein the composition has an onset of melting temperature of at least 320 °C, wherein said liquid crystalline polyester material comprises at least two fillers or more, and can consist of (A) graphite; (B) carbon fiber; (C) mica; and (D) fibrous polyimide. Long83 fails to teach that the particulate polyimide is used in place of the fibrous polyimide.

Long63 is the secondary reference that teaches a molding composition containing LCP that can comprise polyimide as a one of the combination of fillers, which has heat resistance and high mechanical strength, wherein the polyimide filler can be in either fibrous or particulate form, depending on the intended use of the composition.

Long83 in view of Long63 fails to teach that that the amount of LCP comprises at least about 65% by weight of the composition.

Maeda is the secondary reference that teaches a molding composition comprising LCP as the major component of the matrix resin, in the amount of 60 to 91% by weight when the fillers are present, which overlaps the claimed range of at least about 65% by weight of the composition, for the purpose of providing the desired balance of lubrication and mechanical strength. Long83 in view of Long63 and Maeda, fails to teach that the (A) graphite is present in the composition in an amount of from 1% to about 10% by weight; that the (B) carbon fiber is present in an amount of from 1% to about 10% by weight; that the (C) mica is present in an amount of from 1% to about 5% by weight; and that the (D) particulate polyimide is present in an amount of from 1% to about 10% by weight.

Tsutsumi is the secondary reference that teaches a molding composition comprising LCP as a matrix material; having an onset of melting temperature of at least 320°C. Tsutsumi teaches that a combination of fillers are present in the amount of from 1-25% by weight of the composition, wherein at least two lubricating fillers are blended together for the purpose of providing the desired combination of lubricating and mechanical properties. Thus, Tsutsumi is evidence that combining fillers to achieve mechanical strength along with lubrication in a composition with LCP as a matrix material, is a well-known and accepted practice in the art.

11. Applicant argues that Applicant has claimed a new and specific composition that imparts combined certain physical properties.

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Applicant is respectfully reminded that Applicant has acknowledged that Applicant does not teach a chemical composition with new properties. Instead, Applicant teaches a specific composition recited in allowed claims 11, 13, which has been shown to demonstrate unexpected results in the specification. This showing of unexpected results, however, is not commensurate in scope with the composition recited in the other claims.

12. Applicant appears to argue that only the incorporation of graphite and fluoropolymers in the Maeda reference ('323) would lead one to infer that the compositions disclosed therein could be used to teach lubrication as a property.

Applicant is respectfully reminded that Applicant defines carbon fiber as a lubricating filler (original claim 4), a filler that is present in the composition of Maeda ('323, column 8, lines 58-67).

13. Applicant argues regarding Maeda ('323) that Applicant claims a composition comprising particulate polyimide, which by definition, does not melt, and therefore cannot be included in a list of thermoplastic resins [as done in Maeda].

Applicant is respectfully apprised that Maeda does teach that polyimide is a thermosetting resin, not a thermoplastic one (column 6, lines 32-40). However, the Office is unclear why this is being argued, since Maeda is not being used to teach the element of "particulate polyimide".

Conclusion

14. **THIS ACTION IS MADE FINAL.** There are no new grounds of rejection.

Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

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Any inquiry concerning this communication should be directed to Sow-Fun Hon whose telephone number is (571)272-1492. The examiner can normally be reached Monday to Friday from 10:00 AM to 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rena Dye, can be reached at (571)272-3186. The fax phone number for the organization where this application or proceeding is assigned is (571)273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

S. Hon
Sow-Fun Hon

08/01/07

 8/6/07
NASSER AHMAD
PRIMARY EXAMINER